Summary of Significant Comments

Draft Freshwater Wetlands in Washington State
Volume 1: A Synthesis of the Science

The following is a summary of the significant comments reviewers submitted after reading all or portions of the draft of *Freshwater Wetlands in Washington State - Volume 1: A Synthesis of the Science*. *Significant* means that the comment suggests substantial modification of text or changes to one or more of the key points or conclusions presented in the draft of Volume 1.

This summary is offered as an overview of the hundreds of comments that were provided after the public review. Although some are general, many are very detailed. Some required minor modifications to the text while others required additional research and additions or revisions to the text. In this summary, only the substantive comments are summarized. All of the comments and the authors' responses to them are included in a separate document available on our web site http://www.ecy.wa.gov/programs/sea/bas_wetlands/. Even though many comments are not included in this summary, all comments were considered by the authors of the draft of Volume 1 and appropriate revisions to the document were made.

In the following summary, we combined several comments of a similar nature into one statement and indicated that multiple reviewers provided comment on the topic. All other comments listed here were made by one individual. Comments that are more general in nature are summarized first followed by comments regarding specific chapters.

Some of the comments were submitted in response to a questionnaire distributed with the draft of Volume 1. One of the questions asked was if there were subjects not covered in the document that we should have. In response, one reviewer asked if "acknowledging that you left something out let you "off the hook" for covering such material in this document." The authors' response to this comment is as follows: "Yes and no. We have had no choice but to limit the scope of this document because of resource constraints. We have tried to focus on those topics and issues most relevant to local governments. We have also attempted to be clear about what the document does and does not address. We recognize that many of the topics listed below that were not included in this document are also important and regret not being able to address them. However, we will evaluate whether any of these topics can be addressed in the final version of the document."

The following is a list of the topics people felt should be included in the revisions of Volume 1.

Topics Suggested For Inclusion In Revised Volume 1:

- Regional variations and variations by HGM classes
- Protecting Populations not Just Species
- Landscape-based Regulation
- Temporary Wetland and Buffer Impacts Should be Analyzed
- Need to focus More on Regulatory Follow-Up
- Include a Discussion that GMA Requires Dense Development Which Is in Conflict with Protection of Functions
- PHS: Linkage to WDFW's BAS for Priority Habitat and Species.

- Mining
- The Decrease of Water to Wetlands due to Development Redirecting Runoff
- Interdunal Wetlands
- Marine Seeps and Spring Wetlands
- Pit and Mound Wetlands
- Invasive Species
- Impacts of Cranberry Growing
- The Effectiveness of Fencing to Protect Wetlands and Their Buffers
- Wetlands as Processors of Fecal Bacteria or Pathogens
- Mitigation of Impact in Utility Areas
- The Movement and Routing of Plant and Animal Genetic Material as a Watershed Process
- USFWS Classification

General Comments on Organization and Readability

Kudos

Many reviewers acknowledged the difficulties presented with completing a synthesis of the science and applauded the authors for their hard work. Many reviewers found the text was well written, well organized and easy to read – clear and logical. One specified that the "chapters are organized in a sensible, easy to follow format which covers most if not all of the concerns relating to wetlands and impacts on wetlands." Another specified they could easily find and understand the subjects of interest to them. Many liked the section and chapter summaries and the gray shaded boxes.

Other Comments

1. One reviewer suggested that it would be a great service to have the references used for the synthesis available on the web

2. One reviewer stated that the technical/peer review of this document by outside persons must be documented in a responsiveness summary.

3. One reviewer pointed out that definitions and word usage was not consistent. .

4. Several reviewers felt the document might be too organized with the reader's guides, chapter contents and overviews making the document very time consuming, boring and difficult to use. One didn't like the lock-step organization, used even if there was little or no information on a topic. Another felt the current organization hinders easy and complete review of many wetland impacts issues.

5. Two reviewers suggested organizing the document so that each function is presented as a chapter or major section.

6. One reviewer would like to see the document put to some clearly enunciated, important purposes and distinct questions asked for which to get insights.

7. One reviewer also felt that photos, drawings and graphs imbedded in the text are good ways to keep the reader awake and his eyes entertained. It was also suggested that case studies be presented.

8. A few reviewers found the organization in Chapter 4 difficult. This was partly due to the fact that the chapter is organized by the effects on function rather than by disturbance. However, the disturbances discussed not only affect function, but also affect physical characteristics of the wetland.

General Comments on Content and Bias

Kudos

Most of the comments regarding the literature reviewed for the document were positive. Many reviewers judged the document to be well referenced. Some actually exclaimed at their "awe" of how much literature was synthesized. One said they "intend for this document to stay within easy reach on my bookshelf." Others concluded that it was a thorough and comprehensive synthesis of the science related to wetlands in the State of Washington. One specified they felt the synthesis stuck to the relevant science and is a good primer dealing with a highly complex topic. A number of reviewers appreciated when the document states the findings of particular studies, if there were no studies found, or was clear about what was hypothesis versus conclusions from the literature. Those who commented on possible bias felt there was little of it.

Other Comments

9. One reviewer believed that research of local reference was lacking. The example given was information regarding disturbance caused by irrigation on the Olympic Peninsula.

10. A number of reviewers were concerned about the use of specific terms. The concern seems to be due to confusion that may result if certain terms are used different ways by different people.

11. A reviewer pointed out that "while Volume I emphasizes the importance of a "watershed approach", it limits its focus to traditional wetland science at a watershed scale and lacks connections to general principles of landscape ecology and conservation biology.

12. One reviewer stated that users of this document will need to know what level or intensity of disturbance is substantial enough to cause a significant impact.

13. One reviewer commented that "It is the integration and application of conservation principles into new classification and protection system that will be critical. I recognize that Ecology may not want to consider such large scales in wetland protection but unless such difficult issues are addressed wetland functions may not be protected."

14. A number of reviewers were concerned about statements such as, "in the absence of research to the contrary, it can be assumed that…" The reviewers were concerned that these statements don't meet the criteria in the BAS rule.

15. One suggested that the document separate scientific information and policy in Chapters 5, 6 and or acknowledge they are a blend.

16. One reviewer observed that the document does not include information (literature) from resource agency and university species experts.

17. One reviewer felt there was a tendency to pigeon-hole a given individual paper with others that may have a differing perspective. They suggested some in-depth discussion around key papers in a subject area in narrative style.

18. A reviewer was concerned with referencing other syntheses and therefore material that was not specifically reviewed by the authors. They felt this can lead to erroneous interpretations, and undermines the scientific credibility of the document.

19. Another pointed out that there isn't a clear distinction between gray literature and reports that were anonymously peer reviewed by a scientific journal. Gray literature, personal communications, and conference proceedings are not always peer reviewed.

20. One reviewer pointed out that we don't address the social functions which are valued especially in the case of urban wetlands, therefore we are biased toward rural wetlands.

21. A reviewer commented that the document doesn't provide enough specific background and analysis to "translate" the findings into the needed options and recommendations to regulate or manage wetlands. Their concern is that Volume I is too much of a compilation and summary of scientific studies relating to various wetland issues from across the country with too little attention addressing their relevancy to Washington conditions and issues. They suggested a discussion of how the authors performed this "screening" of the literature is also needed to help address this concern.

22. A few reviewers pointed out that there is an emphasis on the function assessment methods developed by Ecology and others used in the state should be acknowledged. One reviewer felt that as a result the reader has the impression that only the functions covered in those methods are important and/or relevant within the State of Washington. This means that these sections are based more on expert opinion rather than synthesis.

23. One reviewer felt we should put greater emphasis on landscape processes and less on things like buffers which are usually considered out of context.

24. A few reviewers commented on the use of literature from other parts of the country and there is an assumption that wetlands in Washington function similarly. One suggested that the limitations of the transferability of studies to other areas/wetlands should be acknowledged. Another reviewer suggested that those references citing research outside of the Pacific Northwest should be identified clearly in the text. They felt it prudent to expound on this fact in the document.

25. One reviewer determined that conclusions in the draft did not appear to be supported by the cited documents.

Significant Comments by Chapter

Chapter 2

26. Commenting on the HGM-based classification system, one reviewer was concerned with lumping wetlands in southwest Washington into the same eco-region as those in the Puget Sound Lowlands.

27. One reviewer suggested that Chapter 2 start with a concise review from the ecological literature before moving into the wetland literature. They also wanted to see a rooting in the general concepts of ecology.

28. There were numerous comments on the soils sections in Chapter 2: potentially incorrect conclusions or lack of description for some soil types. The comments focused on volcanic ash and clay soils.

Chapter 3

29. It was suggested that an analysis of temporary wetland and buffer impacts be presented and analyzed and that these should not be presented in the same importance as permanent impacts. Temporary impacts include power and pipeline installation, maintenance or repair.

30. In regard to a threshold of imperviousness, the reviewer is thoroughly convinced that deterioration begins immediately and progresses at a rapid rate. The reference to a 10% threshold is incorrect.

31. Two reviewers commented on the statement about a net loss of wetland in the Columbia Basin being incorrect. First, the conclusion arrived by Chappel et al. is related to riparian areas, most of which are non-wetlands. The data were from another study. Second, local experts believe that irrigation practices and Bureau of Reclamation projects greatly increased the number and acreage of wetlands in the Basin.

32. Comment: The effect of the removal and extirpation of beaver, as well as damming and diking, in many watersheds on the hydrology and size of wetlands should be addressed.

33. One reviewer noted that there is substantial information on the effects of agriculture on soil properties. The “no-till” farming practice is but one outcome of this research.

34. There were a number of comments on the impacts of grazing and more work is needed regarding its effects. They point out that in some cases the plant species diversity increases with selective grazing. In regard to birds, their density and diversity in wetlands has both increased and decreased with grazing depending on the species. The benefit or detriment can correlate with the degree of grazing disturbance.

35. One commenter expressed that there is an over-reliance on King County's wetland study as presented in the book "Wetlands and Urbanization." They point out that serious concerns have been raised regarding some of the methods of findings in an article published in the scientific journal *Wetlands*.

36. A reviewer commented that the following statement in the document regarding the finding of Azous and Cooke (2001) is not correct and is misleading: *consistently found a decline in plant species richness*. The relationship was inconsistent among the 26 wetlands in their study.

Chapter 4

36. One reviewer was concerned that Chapter 4 has a negative tone when the rest of the document was neutral in tone.

Chapter 5

37. Comment: The statements here concerning isolated waters are not quite accurate. 1): The Corps defines "isolated waters" in their 1986 regulations at 330.5(a) 26 ii, which state in part: "Other non-tidal waters of the U.S. including adjacent wetlands that are not part of a surface tributary system to interstate waters or navigable waters of the U.S." are isolated waters. In layman's terms this means that if the water has no surface water connection to a navigable/interstate water they are isolated—note the emphasis is "waters" not wetlands. So streams etc. that do not connect to navigable/interstate waters are also isolated. Wetlands that are adjacent to waters that have a connection are jurisdictional; it is not true that wetlands with no surface water connection are isolated.

In fact, the Supreme Court decision (SWANCC) held only that isolated wetlands, whose only interstate connection is use by migratory birds are not "waters of the United States." What was overturned here is the issue of using interstate commerce (i.e. migratory birds) to establish jurisdiction. Finally, as of late, there have been several court decisions and informal confidential guidance concerning these isolated waters and establishing jurisdiction. This Best Available Science document should only mention what the Supreme Court said and indicate that policy concerning this decision is still in flux and seems to change daily.

38. Comment: The PC discussion is not quite correct. PC's not only are manipulated prior to Dec. 1985 and ponded or flooded as indicated. They must produce an agricultural commodity that requires planting a crop that requires annual tilling. There is no question that these areas may still be wetlands; however, by regulation they are not considered "waters of the U.S.". In addition, I would add the statement that if these sites are abandoned (i.e., no tilling and planting has occurred for five consecutive years) and hydrophytic vegetation and wetland hydrology return then these areas are considered waters of the U.S.

39. Comment: Include the size of "small" for each study cited, it will make the information more valuable and won't be misleading. The size of "small" differs with local especially between states.

40. Comment: The analysis of small wetlands should be re-written to help establish which small wetlands in a landscape may actually be providing important functions. From this analysis, protection guidelines can be developed (in Volume 2) that protect wetland functions. A discussion that focuses on wetland characteristics, biota, and functions of Washington's small wetlands is needed.

Alternatively, if data show that all small wetlands, regardless of their physical, biologic, chemical or landscape attributes are providing important functions, than this section should demonstrate this situation. As the section is currently written, I find it misleading and overly defensive.

41. Comment: Based on observations made by the technical team during development of the Eastern WA Functions Assessment work, it appeared clear that many (if not most) of the vernal pool habitats were not jurisdictional wetlands because they dried before the start of the growing season. Please consider mentioning this in the BAS document.

42. Comment: Last sentence states: "This literature does not specifically address the role of buffers in providing connectivity between wetlands and other parts of the landscape." There is literature that does exist that deals with these issues such as the National Academy of Science's Study (2001).

43. Comment: First sentence states: "However, no studies were reviewed for this synthesis that compared wildlife use of mature forested buffers with buffers composed of meadow, shrub land, logged forest, or younger forests. Brown et al 1985 lists primary breeding and feeding habitat for different species in wetland, riparian grass-forb, shrub, open sap-pole, closed sap-pole, large saw timber and old growth forest. There is a fair amount of wildlife literature of wetland associated species with mature forest. Different cavity nesting species of birds need different tree diameters at breast height (dbh). For example, Wood Ducks need an absolute minimum of 14 inch dbh but 24-30 inch dbh is preferred.

44. Comment: I just don't agree with these findings (suggested buffer widths for wildlife). The model I recommend is that if you built a wall around different functioning wetlands at these distances will you still have the initial viable population of invertebrates, amphibians, reptiles, birds and mammals – five years, ten years etc. later? I doubt it!

Chapter 6

45. Comment: A topic that we believe deserves more attention is Regulatory Follow-up. Section 6.4.8 of the report provides compelling evidence that: (1) the amount of follow-up by permitting agencies has a direct impact on the success of wetland mitigation projects and; (2) that agency follow-up is woefully inadequate. Though it may seem difficult for DOE to impact the amount of regulatory follow-up that local jurisdictions provide, suggested mitigation ratios should not be increased to compensate for mitigation failures that may occur because of the lack of agency follow-up. We suggest an educational program by DOE to inform local jurisdictions of the importance of follow-up on wetland mitigation projects.

46. Comment: Ecology should independently review the results and summarize monitoring of wetland impacts that has been a component of several development projects in King County. Should provide synthesis analysis in this document. See list of projects below. A team of qualified and experienced ecologists and engineers implemented pre- and post- construction monitoring of wetland, hydrologic, wildlife, meteorological, channel geomorphology, and water quality conditions. The monitoring results indicate that the buffers imposed on the project (100 ft for Class 1, 50 ft for Class 2, and 25 foot for Class 3 wetlands), in combination with stormwater management facilities for water quality and water quantity were protective of wetland hydrology, wetland vegetation, fish habitat, channel morphology, and water quality. There is no indication the additional buffers would add additional aquatic functions.

47. Comment: This section would benefit from some discussion of unrealistic and unachievable success standards, such as 80 aerial cover of woody species in three years, or no cover provided by invasive plant species.

48. Comment: Without mention of the problems of unrealistic, unachievable performance standards, the language leaves readers with the impression that a poor planning implementation, and site maintenance is the only observed reason for failure to achieve performance standards. In many instances, regulatory and design staff have developed/negotiated performance standards that are unattainable (e.g., weed cover < 10%).

49. Comment: The enhancement elements included in the mitigation wetlands that these authors are concerned about are features that are known to be important to water dependent species of concern to wetland regulators. Decisions relating to enhancement, out-of-kind mitigation (i.e., changed HGM and or vegetation classes) must be considered in the context of project impacts, functional lift, and cumulative losses. Table 2-5 indicates the most common wetland types provide nearly the same functions. Considering the small amounts of wetlands affected, the general commonality of functions across HGM classes, and the increased mitigation ratios applied to this mitigation type, large "shifts" in functional performances at the landscape scale are unlikely.

50. Comment: The document should reference studies by Ostergaard (2000, 2001) that suggest several amphibian species commonly use stormwater management ponds, which have high levels of water level fluctuations, which is contrary to information provided in this paragraph.

51. Comment: It seems there were a number of recommendations in National Academy of Sciences report on Wetlands Mitigation that were not included here and could be. They include those in the list following:

- *Riparian wetlands should receive special attention and protection, because their value for stream water quality and overall stream health cannot be duplicated in any other landscape position.*

- *Pay attention to subsurface conditions including soil and sediment geochemistry and physics, groundwater quantity and quality and infaunal communities.*

- *Site selection for wetland conservation and mitigation should be conducted on a watershed scale in order to maintain wetland diversity, connectivity and appropriate proportions of upland and wetland systems. Regional watershed evaluation would greatly enhance the protection of wetlands and/or the creation of wetland corridors that mimic natural disturbances of wetlands in the landscape.*

- *All mitigation wetlands should become self-sustaining. Proper placement in the landscape to establish hydrogeological equivalence is inherent to wetland sustainability.*

- *Dispersal of plants and animals is influenced by the proximity and number of wetlands in a geographic area. Connectivity between (Harris 1988) and functional interdependence of wetlands with other landscape units (Bedford and Preston 1988) can also affect animal use because many species (e.g., some amphibians), require an upland-wetland matrix. Therefore*

both the terrestrial connectivity between wetlands in the landscape and the terrestrial habitat surrounding the prescribed wetland must be considered in designing mitigation wetlands.

- *Whenever possible, choose wetland restoration over creation. Select sites where wetlands previously existed or where nearby wetlands still exist. Restoration of wetlands has been observed to be more feasible and sustainable than creation of wetlands . . .*

- *Avoid over-engineering the wetland design. Design the system for minimum maintenance. Set initial conditions and let the system develop. Natural systems should be planned to accommodate biological systems. The system of plants, animals, microbes, substrate and water flows should be developed for self-maintenance and design. Whenever possible, avoid manipulating wetland processes that require continual maintenance. Avoid hydraulic control structures and other engineered structures that are vulnerable to chronic failure and require maintenance and replacement. If necessary to design in structures, such as to prevent erosion until the soil has developed soil stability, do so using natural features such as large woody debris . . .*

- *When feasible, use natural recruitment for more resilient vegetation establishment. Some systems, especially estuarine wetlands are rapidly colonized, and natural recruitment is often equivalent or superior to plantings (Dawe et al. 2000). Try to take advantage of native seedbanks, and use soil and plant material salvage whenever possible.*

- *Long-term management is especially important because wetland restoration and creation sites seldom achieve functional equivalency with reference sites or comply with permit requirements within 5 years. Up to 20 years may be needed for some wetland restoration or creation sites to achieve functional goals.*

52. Comment: Measurable and ecologically meaningful "interim performance measures" and success standards in mitigation plans are important and must be carefully and thoughtfully developed. Two documents (Ossinger and WSDOT guidance document) discuss this. This will improve design and performance. Include discussion of this.

53. A reviewer felt that the section on mitigation banking was not balanced, it presents the perceived positives and ignores any concerns.

Chapter 7

54. A reviewer commented that Chapter 7 goes beyond a synthesis of “best available science”. However, it provides a lead into Volume 2.

55. Comment: I disagree with conclusions regarding the adequacy of data sources. There is no analysis presented on how effective local regulations have been at protecting wetlands or wetland functions. There is no assessment addressing or quantifying to what extent cumulative losses to aquatic functions are or are not occurring in Washington State under existing wetland CAO ordinances. There is no analysis of how the range of existing development review standards (including clearing and grading permits, extensive stormwater management requirements, CAO requirements, and

other mitigations) may or may not be adequately protective of wetlands and aquatic environments in Washington State.

56. Comment: Reviewing the results of previous studies on wetland losses in the U.S. is of no value in determining the nature and causes of ongoing cumulative impacts in Washington. The magnitude of ongoing cumulative impacts to wetland area and functions should be considered in reference to historical impacts to wetlands and functions (which this document establishes). Without identification of current and ongoing cumulative impacts to wetland dependent wildlife, the various physical functions, and the water quality functions that wetlands provide, how can this "synthesis" volume translate findings into regulation and policy (the intent of Volume 2) to meet GMA requirements? This section should identify the Council on Environmental Quality definitions of cumulative impacts. The authors should be aware of approaches to conducting cumulative effect assessments under NEPA (see Council on Environmental Quality 1997).

57. Comment: Ecology has not presented convincing evidence that under currently imposed CAOs consistent and significant losses in wetland functions are occurring statewide. While wetland CAOs vary widely across the state, there have been no quantifications of the overall performance of these programs and no real systematic evaluation of their effectiveness or deficiencies. There is no consideration of how stormwater management requirements, grading permit requirements, and other mitigations are implemented to protect critical areas and under what circumstances these are sufficient or inadequate.

While there is no question that upland development affects non-water or wetlands dependent wildlife, there is little information presented in this document that shows, in Washington, wetland dependent wildlife are declining or otherwise being impacted by CAOs standards that are inadequate. Upland wildlife also requires certain protections under GMA, and governments must specify fish and wildlife habitat conservation areas to maintain the viability of wildlife populations. Wetlands and wetland buffers should not necessarily be designed to maintain non-wetland dependent upland wildlife.